WHAT IS CLAIMED IS:

1	1. A multi-aperture high-fill-factor telescope comprising:
2	a plurality of sub-aperture telescopes, each sub-aperture telescope being
3	configured to collect electromagnetic radiation from a scene and including first, second,
4	third, and fourth powered mirrors;
5	a set of combiner optics configured to combine electromagnetic radiation
6	collected by the sub-aperture telescopes to form an image of the scene; and
7	a plurality of sets of relay optics, the sets of relay optics are respectively
8	associated with the sub-aperture telescopes and each set of relay optics includes a first flat
9	fold mirror, a trombone mirror pair, and a last flat fold mirror, wherein the last flat fold
10	mirrors are disposed within about a beam diameter of respective exit pupils of the sub-
11	aperture telescopes.
1	2. The multi-aperture high-fill-factor telescope of claim 1, wherein the
2	last flat fold mirrors are disposed substantially symmetrically about a central axis.
1	3. The multi-aperture high-fill-factor telescope of claim 1, wherein
2	each of the first and second powered mirrors of the sub-aperture telescopes form a first
3	Cassegrain telescope and each third and fourth powered mirrors of the sub-aperture
4	telescopes form a second Cassegrain telescope.
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1	4. The multi-aperture high-fill-factor telescope of claim 1, wherein
2	each of the first and second powered mirrors of the sub-aperture telescopes forms a
3	Gregorian telescope and each third and fourth powered mirrors of the sub-aperture
4	telescopes form a Cassegrain telescope.
1	5. The multi-aperture high-fill-factor telescope of claim 1, wherein
2	each of the first and second powered mirrors of the sub-aperture telescopes form a
3	Cassegrain telescope and each third and fourth powered mirrors of the sub-aperture
4	telescopes form a Gregorian telescope.
1	6. The multi-aperture high-fill-factor telescope of claim 1, wherein the
2	set of combiner optics form a combiner telescope.

1	7. The multi-aperture high-fill-factor telescope of claim 6, wherein the
2	exit pupils are located about at an entrance pupil of the combiner telescope.
1	8. The multi-aperture high-fill-factor telescope of claim 1, wherein the
2	exit pupils are located about at the last flat fold mirrors.
1	9. The multi-aperture high-fill-factor telescope of claim 1, wherein the
2	first, second, third, and fourth powered mirrors of each telescope are configured to correct
3	for sine magnification errors.
1	10. A multi-aperture high-fill-factor telescope comprising:
2	a plurality of sub-aperture telescopes, each sub-aperture telescope including
3	at least first, second, third, and fourth powered mirrors and an exit pupil disposed optically
4	remote from an associated sub-aperture telescope;
5	a plurality of sets of relay optics disposed optically downstream from the
6	plurality of sub-aperture telescopes and each set of relay optics includes a first flat fold
7	mirror, a trombone mirror pair, and a last flat fold mirror, wherein each last flat fold mirror
8	is disposed within about a beam diameter of an associated exit pupil; and
Q	a combiner telescope disposed optically downstream from the sets of relay

optics.